DOCUMENT RESUME

ED 411 501 CS 012 915

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TITLE Issues and Technology Use in Reading Instruction.
PUB DATE 1997-00-00
NOTE 13p.
PUB TYPE Opinion Papers (120)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Attitudes; Computer Literacy; Computer Mediated Communication; Computer Software; *Computer Uses in Education; Elementary Secondary Education; *Internet; Learning Strategies; *Reading Instruction; Reading Skills; Student Needs; Teaching Methods
IDENTIFIERS *Learning Environment; *Technology Integration

ABSTRACT

Technology has been making rapid strides since its inception in the school curriculum. In 1970, four kinds of software were available for use in reading instruction, although they were criticized for deficiencies. Throughout the 1980s, the number of schools having computers and sufficient software increased. Advantages in using computers in reading instruction are numerous--problem solving in reading may be stressed rather than older simulation programs of instruction. Quality programs in phonics instruction can assist pupils to move forward in small sequential steps; other programs stress critical thinking. On the Internet, pupils may look for and read content in depth. Use of the Internet will revolutionize reading instruction. Information for reading may come from different nations, and diverse methods of teaching reading will be shared increasingly among educators. In expanding the learning environment to include databases, computer networks, and other library resources throughout the world, the Internet makes it possible for pupils to shape their own education. A multimedia approach used in the teaching of reading assists in relating what is taught in reading to other curriculum areas such as science, social studies, literature, and mathematics. (Contains nine references.) (CR)

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1997

ISSUES AND TECHNOLOGY USE IN READING INSTRUCTION

ED 411 501

There are numerous issues involved when technology is introduced into the school curriculum. Technology is making rapid strides since its inception in the curriculum and will certainly not let up on its use. Rapid improvements are being made in its development and use. In the societal arena, technology and its use is replacing many workers. Companies increasingly so are using fewer workers and depending more upon automation. There are companies that even use technology to make for accountability of its product. If a manufactured product then is not made satisfactorily, the involved machine will cull any deficient object. Thus quality control is in the hands of the machine which automatically produces a product. For example, when touring RJR Nabisco in Winston-Salem, North Carolina as a nonsmoker, the entire operation from the time tobacco is brought to the processing plant to the final package of cigarettes is completed through automation. The few employees involved in its operation, carefully monitor and observe that the involved computerized machines are functioning adequately. In picking up a package of cigarettes from a barrel, I asked the guide why the machine had rejected this package. The package of cigarettes looked neat and attractive. The guide also could not see anything wrong with it, but the machine did its job to emphasize quality control.

Even on farms, the trend is to employ fewer and fewer people in work performed. Thus in a large laying house for hens, there are cages of six to eight hens in a cage, set in long rows, perhaps a twelfth of a mile in length. The rows of cages are two deep. Automatically, the mash or feed circulates down the long troughs in front of each cage, once every forty five minutes. Water flows by gravity continuously so that the laying hens have plenty of water to produce eggs. Eggs laid by the layers gently drop onto a long belt which transports them to one end upon pressing a button by the operator or owner of the laying hens. The eggs are then packed into boxes by hand or automatically if these automated devices are available in the laying house. One person then can readily take care of twenty to thirty thousand laying hens. Electric

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lights during winter go on automatically and off also. Thus layers may have the seventeen hours of light per day needed to produce well.

When growing up on a farm in the early 1940s, my parents had 300 hens in one laying house. I carried the mash or feed in a bucket by hand from the large barn to the laying house, a distance of eighty feet. I also pumped the water by hand into a bucket and carried it to the hen house waterers, a distance of ninety feet.

Automation and technology then make work easier and more efficient. Are there any disadvantages in what has been discussed so far in technology use? It is quite obvious that many workers are displaced. Estimates are that about two per cent of American population are involved in farming whereas in 1776, approximately ninety per cent were farmers. What does this have to do with reading instruction, education, and teaching? If technology affects one area in society, another area will also be involved.

Issues in Technology Use

The reading curriculum has certainly been changed or modified due to technology. In the later 1970s, there were four kinds of software available for use in reading instruction. These included drill and practice, games and gaming, simulation, and programmed reading. Few schools had the needed hardware or the software to benefit a significant number of pupils in the public schools. In the areas where I supervised student teachers and cooperating teachers, in Missouri, Iowa, and Illinois, there tended to be one computer for four classrooms of pupils. The amount of software available presented another problem with its many deficiencies. The quality of software met up with much criticism by teachers. The following criticisms were heard frequently:

1. drill and practice activities were not of the quality that pupils could experience from a carefully selected workbook.
2. games lacked relevance and were developed for entertainment rather than reading instruction.
3. simulation appeared to lack reality in that problem solving seemed so artificial in nature.

4. programmed reading was tedious and repetitious in that pupils moved forward in such small sequential steps that boredom was very much in evidence.

Throughout the 1980s, the number of schools having computers and sufficient software increased in number, but the quality of programs are still heavily criticized. The feeling is that basal texts and accompanying workbooks, in many cases, are developed more effectively for sequential pupil progress in reading. It is expensive to have an ample number of computers as well as sufficient software. Then too, the computerized materials soon become outdated. I recently supervised a student teacher and the accompanying cooperating teacher in a classroom where the computer was very slow with sequential frames shown in software use. I did not have the patience here to preview software programs due to its slowness in sequential movement of learning activities. Thus with computers and software, the expectations are that the pupil can operate at a rate of speed to prevent wasting of time. There are computer breakdowns which, I believe, happen too frequently. Assistance then is not available to make learning sequential.

Advantages in using computers in reading instruction are numerous. It is a way of emphasizing modern approaches in teaching. Pupils may read to gain information through internet and World Wide Web. Problem solving in reading may truly be stressed here rather than then older simulation programs of instruction. E Mail messages may be encoded and decoded by pupils readily.

There are quality programs in phonics instruction available. These programs assist pupils to move forward in small sequential steps. Other programs of computerized instruction stress critical thinking whereby pupils learn to separate facts form opinions, fantasy from reality, and accurate from inaccurate statements. Additional software programs may stress creative thinking whereby learners come up with novel, unique responses. There will always be questions pertaining to the quality of these programs in guiding pupils to achieve objectives. I do see much improvement here when making comparisons with the later 1970s and the present.

Technology and the Young Learner

Technology holds much promise for pupils who are developing readiness for reading. I have observed numerous early primary grade teachers use word processors in a personalized reading program. Here, pupils need background information so that they have ideas to share with the teacher in order that he/she may type commands into the word processor. The background information may come from contents on a videotape, objects on a learning center, and/or excursion on the school grounds. Pupils present ideas from the background experiences to the teacher who types into the word processor. Learners may then see talk they present typed and appear on a large screen. After the content has been presented and typed by the teacher, pupils may read the content together. The teacher points to the words and phrases as they are being read collectively. Pupils learn to identify new words and build a sight vocabulary through oral reading with teacher guidance. Many pupils like to read the contents over and over again. Here, learners become quite proficient in recognizing abstract words. It is relatively easy for pupils to identify these words since they possessed the background information from personal experiences. Each personalized chart from the printout may be saved and read again upon request by pupils. Sometimes, the charts are put together and bound with spiral binding. Pupils begin to feel like authors as the binder becomes larger and filled with pupils writing.

There are numerous educators who believe that personalized reading is for early primary grade pupils only. Actually, pupils in any grade level may do an experience chart. As learners become increasingly skilled in using the word processor they may write up their own experiences. This does not rule out writing in long hand and reading the related subject matter. However, pupils who learn to use the word processor early in their school experiences marvel at the results and make comments such as the following:

1. You can really mess up and still come out with a good

document. Spell check helps with correcting many spelling errors.

2. One can insert or delete with no effort in written work.

3. The margins, indentation, and neatness remain regardless of how many corrections are made.

4. Cutting and pasting is so easy to do when using the word processor. You do not have to start over when the word or sentence order is not what was originally desired.

5. Technology is wonderful. I am so glad that someone can think of all these inventions!

Once pupils can do their own writing, they should do so with the word processor. Learners may experience and record these experiences in a personalized reading and writing program. From my observations, I definitely believe pupils like to do more writing with the word processor as compared to using longhand. Pupils may revise until they get the quality of writing desired for the final document. Pupils may work individually or collaboratively in using the word processor. There are pupils who would rather work alone in the writing project while others like to work within a team or group. Learners possess different learning styles and achieve using diverse approaches such as individual versus group endeavors. Howard Gardner (1993), in his Theory of Multiple Intelligences speaks and writes about interpersonal and intrapersonal intelligences. Thus some like work work interpersonally whereas others desire the intrapersonal approach. No doubt, all pupils should learn to work using both approaches. However, a preferred pupil learning style should be honored in many situations by the teacher.

The word processor is a marvelous device that I believe all should develop proficiency in use. The price of word processors are more economically feasible for individuals than ever before and the size certainly is becoming smaller such as the lap top computer which can be carried around easily.

Each pupils in school should have ample opportunities to use word processors whether in an early primary grade reading program or in later years in schooling. With quality sequence, each pupil can make

continuous progress on learning to use the word processor.

There are definite criteria that need to be used in emphasizing learning opportunities in reading technology use (Ediger, 1988):

1. learners need to experience sequence or order in activities and experiences. The sequence may be pupil centered in that the learner may sequence his/her own activities. This is a psychological sequence whereby a logical sequence is teacher determined or external to the learner.

2. activities must be meaningful to the involved pupil. Thus what is achieved makes sense and is understood.

3. pupils need to experience success and continuous progress in ongoing learning opportunities.

4. quality attitudes need adequate emphasis in the reading curriculum.

5. interests of pupils need to be developed and maintained.

6. pupil purpose in learning to read more proficiently needs to be emphasized in reading.

7. motivation to encourage reading skills through technology use is important.

8. pupils should do more reading with technology use than previously.

9. individual and collaborative endeavors should be stressed in reading technology.

10. balance among knowledge, skills, and affective objectives needs to be in evidence.

The psychology of technology use in reading needs to be emphasized so that each pupil achieves more optimally.

Using the Internet in Reading

Pupils need careful supervision so that objectives in reading are being emphasized. For example, on the internet, pupils may look for and read content in depth. Internet is popular and used throughout the world. From India, Anandan (1997) wrote:

Internet is the Network of Networks in the world. One can access

vast amounts of information through internet...Network is an association of different types of systems. The purpose of networking in education is to create alternative routes to learning. There are two types of networks. They are (1) Local Area Network (LAN) and (2) Wide Area Networks (WAN). LAN is a computerized telecommunication network on a limited area such as school, college, or university campus. LAN is designed to cater to the needs of of the defined group of users. WAN is a more Global Network. It connects with centers located at long distances nationally or internationally...

Internet is the Network of Networks in the world. It is referred to on the information superhighway. One can access a vast reservoir of information through internet. It is accessible to one who has a computer, a modem, and a telephone connection.

Internet is a giant of network of communication. Internet is a very powerful information technology network and is being considered very seriously by people around the world. Internet now has two million registered users. Students at all levels are finding the facility very useful in their study. The information sharing through networks and document delivery are helpful in the teaching staff to update their knowledge and to research scholars to collect the related literature available all over the world (Anandan, 1997).

Use of the internet will revolutionize reading instruction. Information for reading may come from different nations on the planet earth. Diverse methods of teaching reading will be shared increasingly so among different educators. The rapidity with which information will be available to increase the pool of knowledge as well as methods of teaching reading will indeed change how literature is taught and what pupils will learn. Sequence in instruction for learners will also make for rapid changes. With a logical sequence, the content is sequenced for the learner and with a psychological sequence, the learner makes an increasing number of decisions in terms of sequence or order of learning opportunities pursued.

With the use of internet, pupils with teacher guidance may truly engage in problem solving activities. Thus, a problem or question is

identified and delimited. Learners then read to gather data from internet. Other activities may also be used which include reading and nonreading experiences.

CD ROM software also contains that which is rich in information, multimedia, and hyperlinks. Depth learning rather than survey approaches might well be in evidence in the reading curriculum with CD ROM use. However, there are selected pupils who may look for surface level elements and away from purposely integrating the rich information resources that exist when using CD ROM. Pupils may then be looking for graphics, videos, pictures, or music and avoid reading text information longer than a single word or sentence (Leu, 1996).

Promoters of computers in the classroom claim that exposing pupils to WEb sites, e- mail, and newsgroups promises more than the means of securing a job in the next century.. Technology boosters also predict that the use and mastery of the internet and World wide Web will produce affective changes that can be measured to produce increased student confidence and self-esteem. Whether working at home or in school, as an individual or in cooperative learning or team setting, students will become "infotectives," i.e. independent thinkers researchers, inventors, inquirers, capable of solving problems that often required the active direction of the teacher or supervisor...

In expanding the learning environment to include data bases, computer networks, and other library resources throughout the world, the internet makes it possible to shape their own education. Once the easy accessing protocols are learned, the student can dive into these resources in the comfort of his/her home and/or library without the constant supervision and intervention of the teacher. Lao Tzui's dictum, "He who teaches least teaches best," describes student centered teaching, learning, and assessment environment in which the student can access information from multiple perspectives and learn to use this information to solve complex problems. Freedom, however, also opens the possibility of choice... (Maskin, 1996).

With a variety of learning opportunities in reading instruction, computer use has opened up and will continue to do so with numerous

activities to increase pupil achievement in learning to read more proficiently. The future seemingly looks bright for use of technology in the classroom. The use of World Wide Web and Internet, e- mail, faxing, and the electronic bulletin board, among others, will guide pupils to attain vital objectives of instruction. Desktop videos, as a truly modern device in technology, integrate voice, sound, and the pictorial (Ediger,1997).

The Classroom Environment for Reading

Teachers and principals need to provide an environment for literacy to occur. When entering a school building, one can notice what is done to encourage reading on the pupil's part. Thus there is a sign above the principal's office stating, "Welcome to our school– a community of readers!" Outside of a classroom, pupils individually or collaboratively are reading and discussing library books read. A large hallway bulletin board contains written work of pupils covering content read in literature (Feirsen, 1997).

There are numerous ways in which a school reveals interests in encouraging literary endeavors by pupils. The centralized as well as classroom libraries have large selections of tradebooks on diverse titles and reading levels for pupils to choose from in reading. Inside of classrooms, there are also bulletin board displays for pupil motivation to read. One bulletin board contained the caption, "Read About Animals." Underneath the caption were book jackets pertaining to selected animal stories. Each of the titles shown encouraged pupil reading since these books were being read by learners in sustained silent reading (SSR).

In another classroom, a small group of pupils were writing a different beginning for a tradebook, using a word processor. Another group was writing a different ending than that contained in a CD ROM. They were waiting for their turn in using the word processor.

There were so many exciting learning opportunities going on in different classrooms to indicate the importance of reading. I will mention a few others:

1. four pupils had read cooperatively a story from a packaged program and were now making a diorama to indicate comprehension and appreciation.

2. Five pupils listened to a cassette recorded story. They were now working on a formal dramatics activity by writing out the play parts. There was a role for each participant in the play which would later be presented in the classroom for other learners as well as for other classrooms to observe.

3. Five pupils observed a story on videotape. Following the presentation, these pupils were working on a creative dramatics presentation with no written parts. The purpose was to breathe life into the contents of the story. Later, pupils presented a summary of the play for the teacher to record on the word processor. A copy of the summary was read to classmates. A good discussion followed whereby pupils reviewed the videotaped contents to answer questions raised by classmates.

In Conclusion

Technology might well provide new avenues for pupils to engage in an exciting reading curriculum. The goal in overall reading instruction is to guide pupils to read for personal enjoyment and utilitarian purposes. To achieve these two goals, pupils with teacher guidance need to do much reading. Being able to identify words and read fluently is important so that comprehension and interpretation of what has been read is clearly in evidence. A multimedia approach used in the teaching of reading assists in relating what is taught in reading to other curriculum areas such as science, social studies, literature, and mathematics. The content read in multimedia pertain to each of these curriculum areas. The excitement of reading through technology use might well enhance reading achievement substantially in personal reading as well as future skills needed at the work place.

In beginning work with computers for young children, teachers must perform several different roles in computer-enriched classrooms.

Instructor. When computers are introduced into a classroom, young children need time to become familiar and comfortable with the technology. During the initial learning period, the teacher must assume an active instructional role, guiding the children through new software and encouraging exploration.

Coach. As children gain experience with computers and are able to perform tasks independently, the teacher gradually moves into the role of facilitator, providing guidance and support when needed, and ensuring appropriate behavior.

Model. Children will be much more likely to appreciate the computer as a practical tool for integrated learning if they see the teacher using it in highly visible ways for whole and small-group instruction, for recording stories, and for producing classroom signs and charts.

Critic. To provide a rich, challenging, and appropriate learning environment, teachers must take an active role in evaluating and selecting software that will best enhance children's learning and development (Davis and Shade, 1997).

Appropriate sequence is vital in having pupils achieve as optimally as possible in reading and computer work. Quality sequence guides students to relate new objectives to be achieved with those already acquired. Objectives that are not excessively complex nor too easy for student achievement should be in the offing. Appropriate scope emphasizes the breadth of experiences to be achieved by learners. The scope can either be too broad or excessively narrow in computer work. Careful consideration must be given to "what" should be emphasized within each lesson or unit of study. Relevant content, skills, and attitudes must be stressed within each lesson or unit of study in order that excellence in scope is in evidence. Students individually must achieve as much as possible within the framework of a quality designed curriculum involving scope and sequence (Ediger, 1996).

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